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PATENT - FEE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re: Application of)
MICHAEL L. SCHWEISS)
Serial No.: 09/783,960)
Filed: February 20, 2001) Group Art Unit 3634
For: METHOD AND APPARATUS OF) Exr. B. M. Johnson
OPENING AND CLOSING A)
BI-FOLD DOOR)
Case Docket No.: S339.12.2)

LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

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Enclosed are:

1. The original and two (2) copies of Appellant's Brief;
2. Brief fee of \$165.

Applicant claims small entity status.

Respectfully submitted,

MICHAEL L. SCHWEISS

By Richard O. Bartz

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Arlington, VA 22313-1450 on December 17, 2003.

Richard O. Bartz

Name of applicant, assignee, or Registered Rep.

Richard O. Bartz

Signature

Date of Signature: December 17, 2003



PATENT - FEE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re: Application of
MICHAEL L. SCHWEISS

Serial No.: 09/783,960

Filed: February 20, 2001

For: METHOD AND APPARATUS OF OPENING)
AND CLOSING A BI-FOLD DOOR)

Case Docket No.: S339.12.2

Group Art Unit 3634

Exr. B. M. Johnson

APPELLANT'S BRIEF 37 C.F.R. 1.192

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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Sir:

This brief is in support of the appeal to the Board of Appeals from the decision dated April 23, 2003 of the Primary Examiner finally rejecting Claims 1-5, 13-15 and 17-20 under 35 U.S.C. 103(a). A Notice of Appeal was filed on October 17, 2003.

I. REAL PARTY IN INTEREST

The real party in interest is Schweiss Distributing, Inc., a Minnesota corporation, assignee of the invention and patent application and related U.S. Patent No. 6,199,617.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or ^{inter}ferences. This application is a division of U.S. Patent Application Serial No. 09/314,529, filed May 19, 1999, now U.S. Patent No. 6,199,617.

III. STATUS OF CLAIMS

Claims 1-5, 13-15 and 17-20 are pending in the application. No claim has been allowed.

Claims 1-5, 13-15 and 17-20 are attached as Appendix "A".

Claims 1-5 and 18-20 are rejected under 35. U.S.C. 103(a) as being unpatentable over *Keller '914* in view of either *Ballyns et al* or *Horn*.

Claims 13, 14 and 15 are rejected under 35 U.S.C. 103(a) as unpatentable over *Keller '914* in view of either *Ballyns et al* or *Horn* and further in view of *Bonacina*.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Keller '914* in view of *Ballyns* or *Horn* and *Bonacina* and further in view of *Spangle*.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Keller '914* in view of *Ballyns et al* or *Horn* and *Bonacina* and further in view of *Sanders*.

IV. STATUS OF AMENDMENTS

There are no unentered amendments.

V. SUMMARY OF THE INVENTION

The invention is a method and apparatus for opening a bi-fold door at an increasing rate of speed until the door is open and for closing the bi-fold door at a decreasing rate of speed until the door is closed. A bi-fold door has two flat panels that move between aligned positions to close a doorway and folded side-by-side positions to open the doorway.

The apparatus has bi-fold door lift devices having elongated flat flexible webs having a first end connected to a shaft and a second end connected to anchors. A reversible electric motor operating at a constant speed selectively rotates the shaft in opposite directions to wind and unwind the webs of all the lift devices on and off the shaft. The webs are wound in overlapping relation so that when the door is opened the rate of speed of the opening of the door increases as the diameter of the overlapping web increases. When the door is moving from the open position to the closed position the rate of speed of the closing door decreases as the diameter of the overlapped web decreases. The webs are vertically aligned with rotatable members. This alignment is maintained to ensure the overlapping relation of the webs around the rotating

members during winding and unwinding of the webs around the rotatable members. The webs do not drift or move laterally during the winding and unwinding processes. The anchors include means to adjust the length of the webs to allow the bi-fold door to move to its full open and closed positions.

Figures 3 to 5 and 9 to 11 show the elongated flexible web 35 attached to a rod 83 located adjacent cylindrical member 77 so that on rotation of the cylindrical member 77 the web winds and unwinds in overlapping relation around cylindrical member 77. The overlapping relationship of the web around cylindrical member 77 is maintained by web guide plates 79 and 81 located adjacent opposite ends of the cylindrical member 77 and a closed end slot 88 in a shield 87 located around the cylindrical member 77. As seen in Figure 10, the lateral space between plates 79 and 81 is contiguous with the opposite edges of the web 35. The plates 79 and 81 and shield 87 confine the web to overlapping relationship during winding and unwinding from cylindrical member 77. The closed end slot 88 in shield 87 aligns web 35 with cylindrical member 77. The overlapping relationship of the web during winding and unwinding processes predicates the moving of the door at an increasing rate of speed from the closed position to the open position and moving the door at a decreasing rate of speed from the open position to the closed position. This overlapping relationship of the web on the cylindrical member is always maintained by the guiding function of the plates 79 and 81 and the closed end slot 88 in shield 87. Figures 6 and 7 show the anchor 36 connected to the end of web 35. The anchor 36 is adjustable to take-up slack of the webs and equalize working length of the webs.

In use, the webs are strong, require less maintenance than prior wire cables, last longer than wire cables and substantially reduce noise when the bi-fold door is opened and closed. The webs have at least a 5 to 1 safety factor. Prior bi-fold doors do not use door lift devices having flexible webs and do not open the door at an increasing rate of speed and close the door at a

decreasing rate of speed. The method of opening and closing a bi-fold door moves the panels of the door at an increasing rate of speed from a closed position to an open position and moves the panels at a decreasing rate of speed from an open position to a closed position. There is a long felt need to improve the bi-fold door opening and closing devices and overcome the disadvantages of the winches having wire cables.

Declarations of Michael L. Schweiss and Schweiss brochures are of record concerning the commercial importance and success of the claimed method and apparatus for opening and closing a bi-fold door. Schweiss Distributing, Inc. has in the last four years sold 1,869 bi-fold doors with sales of \$11,687,421.00 having the apparatus and method claimed in this patent application. These sales reflect the long felt need for Appellant's web door lifts. These substantial sales of bi-fold doors are material evidence of the commercial success of the claimed apparatus and method. It is the novel door lift devices with flexible webs as defined in the claims of this application that is the nexus of the commercial success of Schweiss bi-fold doors. The lift devices operate to open and close the bi-fold doors at increasing and decreasing speed rates. This reduces air flow out of a building resulting in a decrease of heat energy loss as explained in paragraph 4 of Mr. Schweiss' Second Declaration. Exhibit C of record lists the advantages of the lift devices with webs. Mr. Schweiss directly connects the long felt need and success of his bi-fold doors to the lift devices disclosed and claimed in this application.

VI. ISSUES

1. Is Appellant's method of opening a bi-fold door at an increasing rate of speed until the door is open and closing the bi-fold door at a decreasing rate of speed until the door is closed as defined in Group I Claims 1-5 and 18-20 obvious to one skilled in the art from the teachings of *Keller '914*, *Ballyns et al* or *Horn*?

2. Is Appellant's apparatus for opening a bi-fold door at an increasing rate of speed

until the door is open and closing the bi-fold door at a decreasing rate of speed until the door is closed as defined in Group II Claims 13-15 and 17 obvious to one skilled in the art from the teachings of *Keller '914, Ballyns et al, Horn, Bonacina, Spangle and Sanders?*

VII. GROUPING OF THE CLAIMS

The claims fall into two groups. Group I comprises method Claims 1-5 and 18-20. Group II comprise apparatus claims 13-15 and 17. The claims of each group are separately patentable.

Group I, Claims 1-5 and 18-20 define a method of opening and closing an opening in a structure with a bi-fold door. The method uses elongated flexible webs. Each web is aligned normal to the axis of rotation of a rotatable member. The alignment is maintained to ensure an overlapping relationship of the web around a rotatable member. The webs are maintained in alignment with the rotatable members during rotation of the rotatable members in one direction to wind the webs in overlapping rotation around the rotatable members to ensure the overlapping of the webs. The result is that the opening speed of the bi-fold door increases as the door opens. The webs are also maintained in alignment with the rotatable members during unwinding of the web from the rotatable members. The result is that the closing speed of the bi-fold door decreases as the door closes. The bi-fold door moves at an increasing rate of speed from the closed position to the open position in response to rotation of a rotatable member which is rotated at a constant rate of speed in one direction. The bi-fold door moves at a decreasing rate of speed from the open position to the closed position during rotation of the rotatable member at a constant rate of speed in a direction opposite the one direction. This is achieved by maintaining overlapping relationship of elongated webs around rotatable members during both winding and unwinding of the webs about the rotatable members. Guide structures are used to prevent drifting or lateral movements of the webs during the winding and unwinding processes.

Claims 3 to 5 are dependant claims that further define the changing speeds of the door during its opening and closing. These speeds change during the entire opening and closing movements of the door.

Claims 18, 19 and 20 define Appellant's method of opening and closing a bi-fold door. Claim 18 defines the method of using a reversible electric motor and laterally spaced annular plates combined with a shield with a slot for opening and closing the bi-fold door at an increasing opening speed and a decreasing closing speed. The web is guided with the plates and slot in the shield to insure or maintain the overlapping relationship of the web in both wind and unwind conditions. This predicates the increase of door opening speed and the decrease in door closing speed.

Claims 19 and 20 further define the operation of the motor speed and door movement speeds.

Group II Claims 13-15 and 17 define Appellant's bi-fold door and apparatus for moving the bi-fold door between open and closed positions at increasing and decreasing rates of speed. The apparatus has door lift devices having elongated flat flexible webs having a first end connected to a shaft and a second end connected to an anchor. A power means selectively rotates the shaft in opposite directions to wind and unwind the webs on and off rotatable members. The webs are wound in overlapping relation so that when the door is opened the rate of speed of the opening of the door increases as the diameter of the overlapping web increases. The webs are normal to the axis of rotation of the rotatable members. Each web is maintained in vertical alignment with its associated rotatable member with annular side plates on the rotatable member and a closed end slot in a shield located about the rotatable member. When the door is moving to the closed position the rate of speed of the closing of the door decreases as the diameter of the

overlapping web decreases. The change in speeds of the opening and closing of the door is achieved with the rotatable members turning a constant rate of speed. In use, the webs are strong, require less maintenance than prior wire cables and substantially reduce noise when the bi-fold door is opened and closed.

Claims 14, 15 and 17 depend on Claim 13. Claim 14 further defines the web as a flat plastic member. Claim 15 defines the plates secured to the shaft and the connection of the web to the plates to confine the web to its overlapping relation around the shaft during winding and unwinding of the web around the shaft. Claim 17 defines the means to adjust the working lengths of the webs so that all the webs work together to open and close the bi-fold door.

VIII. ARGUMENT

Appellant's invention defined in the method and apparatus claims is not obvious to a person skilled in the art in view of the prior art.

The test for determining obviousness of a claimed invention under 35 U.S.C 103 is a four-part inquiry comprising (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations when such evidence is present. *Graham v. John Deere Co.*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966); *Simmons Fastener Corp v. Illinois Tool Works*, 222 U.S.P.Q. 744 (Fed. Cir. 1984).

Obviousness cannot be properly established by locating references which describe various aspects of a patent applicant's invention without also showing evidence of a motivating force which would impel one skilled in the art to do what the patent applicant has done. Simply because one can reconstruct an invention by combining isolated teachings of references is not a basis for an obviousness conclusion unless sufficient impetus can be shown which would have led one skilled in the art to combine the teachings to make the claimed invention. *Ex Parte*

Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. 1993).

A. The Prior Art

The prior art of record applied by the Examiner in the rejection of the claims are the following U.S. patents:

U.S. Patent No. 5,168,914 Keller

U.S. Patent No. 4,949,772 Ballyns et al

U.S. Patent No. 6,042,158 Horn

U.S. Patent No. 325,986 Spangle

U.S. Patent No. 4,014,478 Bonacina

U.S. Patent No. 2,274,216 Sanders

B. Scope and Content of Prior Art

Keller '914 is the primary reference.

Keller '914 discloses a conventional prior bi-fold door as described in the Background of the Invention and the prior art for the past 60 years. The *Keller '914* door and lift device, shown in Figure 8, comprising a motor 40, winch 46 and cable 48 wound on winch 46. Winch 46 has a cylindrical drum having a uniform diameter. Cable 48 winds and unwinds along the length of the drum. Guide structures are not used to move the cable 48 along the drum during the winding and unwinding processes. The opening and closing of the door episodes occur at a constant speed determined by the speed of rotation of the winch drum. In other words, the speed of opening of the door does not increase as the door opens. Also, the speed of closing the door does not decrease as the door closes.

The winches have wire cables, such as aircraft cable and cylindrical drums which are rotated with electric motors to wind and unwind the cables on and off the drums. The drums have uniform outer cylindrical surfaces which accommodate cables along the length of the drums. The cables

during winding on the drums can crisscross around the drums. The bi-fold door opening and closing episodes occur at constant speeds determined by the speed of rotation of the drums. The wire cables require periodic adjustments and maintenance. They are subject to wear which reduces their working life. In use wire cables can have frayed cable strands which must be corrected to reduce cable breakage. Wire cables wound on steel drums produce objectionable noise.

U.S. patents to *Ballyns et al* and *Horn* are secondary references related to roll-up door art. *Ballyns et al* discloses a winch mechanism 16 that includes a reversible motor 40 for driving a shaft 44. A pair of spools 46 are secured to opposite ends of shaft 44. A second spool 48 is connected to shaft 44 through a clutch mechanism 46. Clutch mechanism 46 is designed to permit spool 48 to slip as required in use to accommodate differences between the rate of winding on spools 46 and play out on spool 48. Spools 46 are connected with first strap members 70 to the lower panel of a roll-up door. A second strap member connects the spool 48 to the upper edge of the uppermost door panel. There are no shields associated with the straps and spools to maintain overlapping of the straps. The one-way clutch mechanism 54 allows spool 46 and shaft 44 to free wheel during closing of the door and spool 48 and to free wheel during opening of the door. The same spools and strap members are not used to open and close the door. *Ballyns et al* does not disclose nor suggest the use of a single rotatable member accommodating a flexible strap to both increase the speed of opening a bi-fold door and decrease the speed of closing a bi-fold door and shields associated with the strap members and spools.

Horn discloses a roll-up door movable to open and closed positions with a conventional garage door opener. Door 20 is counterbalanced with a coil torsion spring 82 mounted around shaft 84. Spindles 86 secured to shaft 84 accommodate cables 90 which are connected to the bottom panel of door 20. Cables 90 are tension members used by spring 82 to counterbalance the weight of the door. The tension members are disclosed as cables. The specification states that

other forms of tension members 90 may alternatively be used including, for example, cords, ropes, belts, chains, and the like. *Column 4, lines 46-50*. The tension members are not used to open and close the roll-up door. There is no teaching or suggestion by *Horn* of using an elongated flexible web wound on a rotatable member to increase the speed of opening a bi-fold door and being unwound from the rotatable member to decrease the speed of closing the bi-fold door. There are no shields associated with the cables and drums to maintain overlapping relation of the cable on the drums.

U.S. patents to *Spangle* and *Bonacina* are additional secondary art related to winch and reel art. The U.S. patent to *Sanders* is old secondary art relating to bi-fold door lift devices. *Spangle* discloses a belt reel rotatably mounted on a spindle C, shown as a stationary cylindrical member. Reel D is rotatably mounted on the spindle. Reel D has a hub I with outwardly directed arms. Pin or rod E mounted on opposite arms provides a connection for the free end of the belt. Reel D is turned with handle G to wind the belt on the reel. Reel D is not secured to spindle C and does not turn with spindle C. There are no plates secured to a rotatable shaft disclosed by *Spangle*.

Bonacina discloses a winch having a drum 7 accommodating a rope 9. The rope is wound along the length of the drum. Drum 7 is located within a housing 4. The housing has an aperture that permits the rope to be drawn out of the winch. The aperture is in a flanged bushing. The bushing does not insure continuous overlapping of the rope around the drum. There is no suggestion of a flexible flat web guided in overlapping relation on a rotatable member.

Sanders, in 1942, discloses the conventional winch and cable device for opening and closing a bi-fold door. As shown in Figures 1 and 2, cables 17 are connected to eye bolts 24 adjustably attached to brackets 25 on the back of the lower panel of the door. There is no showing of a web and means to adjust the working length of the web to allow the door to move

to the full open and closed positions.

C. Differences Between Prior Art and Claims

The primary reference, *Keller '914*, applied to the method and apparatus claims does not disclose or suggest to one skilled in the art the claimed combination of method steps or combination of structure. There is no disclosure of elongated flexible webs and guide structures associated with the webs to ensure overlapping winding of the webs to achieve increase and decrease door movement speeds during opening and closing of the door. The wire cables of *Keller '914* are wound side-by-side along the length of the drums. One skilled in the art would not use cable guides to cause the cable to overlap around the drums. The total time for opening and closing the door in *Keller '914* is more than the total time for opening and closing Appellant's bi-fold door. Appellant's shorter door opening and closing time saves power and heat and cooling energy losses from the structure equipped with Appellant's bi-fold door and lift apparatus. The cables require periodic adjustments and maintenance and are subject to wear. Appellant's lift devices with webs and web guides are not the mechanical equivalent to the prior art cables and drums in lift devices for bi-fold doors. Appellant's devices are different structures that operate in a different manner and achieve functions that are not disclosed by *Keller '914*.

Winches having cables wound on drums to open and close bi-fold doors have been known in the prior art for at least 60 years. *Sanders, U.S. Patent 2,274,216, Feb. 24, 1942.* During this long period to time no one used flexible webs with winches to open and close bi-fold doors as defined in Appellant's method and apparatus claims. This indicates that it was not obvious to use flexible webs with bi-fold door lifting devices.

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The Examiner's position that Appellant's lift devices with flexible webs for opening and closing a bi-fold door is the full mechanical equivalent of a cable lift devices as shown in the prior art is not supported by the structure, operation and results of Appellant's lift devices with

webs for opening and closing a bi-fold door. Cable door lift devices do not have the same structure, they do not operate in same manner and do not produce the same results as Appellant's door lift devices with flexible webs. Therefore, cable door lift devices are not mechanically equivalent to Applicant's door lift devices with flexible webs.

The secondary references are remote roll-up door art that do not suggest Appellant's claimed method and apparatus combination. *Ballyns et al* uses webs and drums with a clutch mechanism to increase the speed of both opening and closing movements of a roll-up door. *Horn* does not use cables or webs to control opening and closing movements of roll-up door. In view of these facts it is submitted that a person skilled in the art of devices for opening and closing bi-fold doors would find that the teachings of *Keller '914*, *Ballyns et al* and *Horn* are insufficient to make, use and operate Appellant's door lift devices with flexible webs and web guides to ensure overlapping of the webs on rotatable members to increase and decrease the speeds of opening and closing of the bi-fold door.

Bonacina discloses an annular housing 4 around a drum 7 for accommodating a rope 9 used as a winch secured to a buoy for divers. This is remote art that is not related to bi-fold doors and devices to open and close bi-fold doors. The purpose of housing 4 is to support the drum 7 and provide an adjustable locking stopper 10 for rope 9. Stopper 10 does not axially guide rope 9 along the length of drum 7. One skilled in the art would not consider the teachings of *Bonacina* or would find the teachings of *Bonacina* insufficient to provide *Keller '914* with a shield to guide a web for overlapping relation about a rotatable member of a bi-fold door lifting device.

Spangle discloses a hand operated belt reel. There is no disclosure of a power driven winch. One skilled in the art would not reasonably review 117 year-old belt reels for structures useable in power driven winches. There is no suggestion for a person skilled in the art to use the

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belt reel of *Spangle* in a power driven winch.

Sanders is the known old cable lift device for a bi-fold door. There is no suggestion of a flexible web and guide and length adjustment for the web in a lift device for bi-fold doors. One skilled in the art would not find it obvious to use webs and adjustments for the webs from the teachings of *Sanders*.

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D. Appellant's Method and Apparatus for Opening and Closing a Bi-Fold Door Has Achieved Commercial Success and Satisfied a Long-Felt Need

Under 35 U.S.C. 103 commercial success of an invention must be considered in resolving the obviousness of the claimed apparatus and method of opening and closing a bi-fold door.

The relevant portion of 35 U.S.C. 103 provides:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

A judgment of obviousness requires that a determination as whether the claimed invention would have been obvious based on underlying factual inquiries, including: 1) the scope and content of the prior art, 2) the level of skill in the ordinary art, 3) the differences between the claimed invention and the prior art, and 4) secondary considerations of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 U.S.P.Q. 459, 467 (1966); *Monarch Knitting Machine Corp. v. Sulzer Morat GMBH*, 139 F.3d 877, 881, 45 U.S.P.Q.2d 1977, 1981 (Fed. Cir. 1998).

Secondary considerations, such as long-felt need, commercial success, and initial expressions of disbelief by experts should be considered in every case for whatever probative value they have and are not limited to cases where patentability is a "close" question. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 U.S.P.Q. 871 (Fed. Cir. 1983).

As the Federal Circuit Court has explained:

[O]bjective evidence such as commercial success, failure of others, long-felt need and unexpected results must be considered before a conclusion on obviousness is reached. * * * Indeed, as then Chief Judge Markey said in *Stratoflex, Inc. v. Aeroquip Corp.* . . . "evidence of secondary considerations may often be the most probative and cogent evidence in the record. It may often establish that an invention appearing to have been obvious in light of the prior art is not." In spite of the importance that the secondary considerations of commercial success, long felt need, and failure of others played in the considerations of both the PTO and trial court, the infringer conspicuously fails to address them.

Minnesota Mining & Manufacturing, Co. v. Johnson & Johnson Orthopaedics, Inc., 976 F.2d 1559, 24 U.S.P.Q.2d 1321 (Fed. Cir. 1992).

Appellant requested that the First Declaration of Michael L. Schweiss and Exhibits A and B and the enclosed Second Declaration of Michael L. Schweiss and Exhibit C be considered in the reexamination of this application.

The Examiner determined that the sales figures are significant and that there is no nexus between increased sales and the point of novelty of the present invention. Mr. Schweiss states in his Declaration of February 5, 2003, page 3, that the sales of the LIFT STRAP® devices disclosed in this patent application could not have been achieved without the bi-fold door opening and closing devices disclosed and claimed in patent application Serial No. 09/783,960. In paragraph 10, page 4 of his Declaration, Mr. Schweiss states that the need for the lift device and its commercial success are directly connected to the new and novel method and apparatus for opening and closing a bi-fold door described and claimed in the patent application. The Declaration and Exhibits A, B and C of record show the nexus or connection of the claimed invention and commercial success of Appellant's bi-fold doors with winch lifting devices having flexible webs.

The evidence of record of the commercial success and customer satisfaction statements is favorable to the patentability of the claimed method and apparatus. The

nonobviousness of the claimed method and apparatus is supported by the commercial success of the claimed invention.

Appellant submits that there is no evidence of record of any impetus or motivating force which would have impelled one skilled in the art to make Appellant's claimed method and apparatus from the teachings of the reference patents. Appellant submits that a *prima facie* case of obviousness has not been made out by the Examiner. *See, In Re Clay*, 23 U.S.P.Q.2d 1058 (Fed. Cir. 1992); *Ex Parte Levensgood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. 1993).

Appellant requests that the rejection of Claims 1-5, 13-15 and 17-20 under 35 U.S.C. 103(a) be reversed.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Arlington, VA 22313-1450 on December 17th, 2003.

Richard O. Bartz

Name of applicant, assignee, or Registered Rep.

Richard O. Bartz
Signature

Date of Signature: December 17, 2003

APPENDIX A

1. A method of opening and closing an opening in a structure with a bi-fold door having first and second panels, means movably mounting the first panel on the structure, hinges connecting the first panel to the second panel to allow the first and second panels to be moved from generally vertically aligned positions closing the opening to side-by-side folded positions opening the opening, and door lift devices having rotatable members having a common axis of rotation operable to selectively open and close the bi-fold door comprising: connecting the rotatable members to one panel with elongated flexible webs, aligning each web normal to the axis of rotation of a rotatable member, maintaining the alignment of the web with the rotatable member to ensure an overlapping relationship of the web around the rotatable member, simultaneously rotating the rotatable members in one direction with a power unit at a constant rate of speed to wind the webs in overlapping relation around the rotatable members, maintaining the alignment of the webs with the rotatable members during rotation of the rotatable members in the one direction to wind the webs around the rotatable members to ensure overlapping relationship of the webs around the rotatable members to move the first and second panels at an increasing rate of speed from a closed position to an open position, rotating the rotatable members in a direction opposite the one direction at a constant rate of speed to unwind the webs from overlapping relationship around the rotatable members, and maintaining the alignment of the webs with the rotatable members during rotation of the rotatable members in the direction opposite the one direction to unwind the webs from the rotatable members to maintain the overlapping relationship of the webs on the rotatable members during unwinding of the

webs from the rotatable members to move the first and second panels at a decreasing rate of speed from an open position to a closed position.

2. The method of Claim 1 including: operating a reversible electric motor at a constant rate of speed to rotate the rotatable members at a constant rate of speed.

3. The method of Claim 1 wherein: the first and second panels are moved at an increasing rate of speed during the entire movement of the first and second panels from the closed to the open positions thereof.

4. The method of Claim 1 wherein: the first and second panels are moved at a decreasing rate of speed during the entire movement of the first and second panels from the open to the closed positions thereof.

5. The method of Claim 1 wherein: the first and second panels are moved at an increasing rate of speed during the entire movement of the first and second panels from the closed to the open positions thereof, and the first and second panels are moved at a decreasing rate of speed during the entire movement of the first and second panels from the open to the closed positions thereof.

13. A bi-fold door for an opening in a structure and apparatus for moving the bi-fold door between open and closed positions relative to the opening said door having a first panel, means for movably mounting the first panel on the structure, a second panel, means pivotally connecting the first panel to the second panel to allow the first and second panels to be moved from aligned positions closing the opening to side-by-side folded positions opening the opening, said door lift devices being operable to selectively open and close the bi-fold door, characterized by: a reversible electric motor connected to the door lift devices operable at a constant rate of speed for operating the door lift

devices, said door lift devices having an elongated flat and flexible web having a first end and a second end, rotatable means attached to the first end of the web, said rotatable means including a shaft connected to the electric motor and a cylindrical means mounted on the shaft, said cylindrical means including a cylindrical member having opposite ends and annular plates located adjacent the opposite ends of the cylindrical member, said web having opposite side edges located in a contiguous relation relative to the annular plates, a cylindrical shield located around the cylindrical member and annular plates, said shield having a closed end slot aligned with the cylindrical member, said web extended through said slot whereby the annular plates and shield maintain the alignment of the web with the cylindrical member, and means connecting the first end of the web to the cylindrical means whereby upon constant speed operation of the electric motor the shaft is rotated in one direction and the web continuously winds in overlapping relation around the cylindrical member between the annular plates thereby moving the door at an increasing rate of speed from a closed position to an open position and upon reverse operation of the electric motor the shaft is rotated in a direction opposite the one direction and the web continuously unwinds from the cylindrical member between the annular plates whereby the door moves at a decreasing rate of speed from the open position to the closed position, means mounting the rotatable means on one of the panels, and anchor means mounted on the other panel connected to the second end of the web.

14. The apparatus of Claim 13 wherein: the web is a flexible and flat plastic member.

15. The apparatus of Claim 13 wherein: the means connecting the first end of the web to the cylindrical means comprises a rigid member extended between and

mounted on said plates, said first end of the web having means located between said plates accommodating the rigid member whereby when said shaft is rotated by the electric motor the web winds on itself around the cylindrical member to open the bi-fold door.

17. The apparatus of Claim 13 wherein: the anchor means includes means to adjust the working length of the web to allow the door to move to the full open and closed positions.

18. A method of opening and closing an opening in a structure with a bi-fold door having hinged panels, means movably mounting the door on the structure for movement between a down closed position to an up open position, and a door lift device having a rotatable member driven with a reversible electric motor to selectively move the door between the closed and open positions thereof comprising: connecting the rotatable member to one panel of the bi-fold door with an elongated flexible web, guiding the web with laterally spaced annular plates located adjacent the opposite ends of the rotatable member and a web accommodating slot in a shield located around the rotatable member to maintain an overlapping relationship of the web around the rotatable member, rotating the rotatable member in one direction at a constant rate of speed to wind the web in overlapping relation around the rotatable member, guiding the web with laterally spaced annular plates secured to the rotatable member and a web accommodating slot in a shield around the plates during rotation of the rotatable member in one direction to ensure overlapping relationship of the web around the rotatable member to move the door at an increasing rate of speed from the closed position to the open position, rotating the rotatable member in a direction opposite the one direction at a constant rate of speed to

unwind the web from overlapping relationship around the rotatable member, and guiding the web with the laterally spaced annular plates and the web accommodating slot in the shield around the plates during rotation of the rotatable member in the direction opposite the one direction to maintain overlapping relationship of the web on the rotatable member during unwinding of the web from the rotatable member to move the door at a decreasing rate of speed from the open position to the closed position.

19. The method of Claim 18 including: operating the reversible electric motor at a constant rate of speed to rotate the rotatable member at a constant rate of speed.

20. The method of Claim 18 wherein: the door is moved at an increasing rate of speed during the entire movement of the door from the closed to the open positions thereof, and the door is moved at a decreasing rate of speed during the entire movement of the door from the open to the closed positions thereof.